

# Carbon coating: Researchers develop new process to increase strength of medical instruments

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Queen's University researchers Cathleen Crudden (Chemistry), Hugh Horton (Chemistry) and Alastair McLean (Physics) have developed a new technique that makes high-precision carbon-based coatings a reality for many laboratories around the world.

The type of biosensor they are using in the research is used in virtually every hospital in the developed world. The coatings will increase the robustness of [medical instruments](#) used in hospitals around the world and will also be used for [corrosion resistance](#) for metals.

"Previously the technique used to apply these coatings required access to specialized equipment," says Dr. Crudden. "We have now designed a simple process for applying the coatings without any specialized equipment, making the application process accessible to everyone."

This [new technique](#) builds on an earlier discovery in 2014 when the research trio developed a technique to prepare single molecule-thick coatings of [organic molecules](#) on the surface of metals. Despite being 100,000 times thinner than a human hair, this layer is able to withstand a battery of [harsh chemicals](#), oxidants, acids and bases - a discovery that has positive implications for the microelectronics industry (an industry devoted to the design and development of tiny electronic devices).

The recent discovery allows the coating to be applied without the use of

specialized equipment therefore making it more accessible.

Working with GreenCentre Canada, Drs. Crudden, Horton and McLean hope to make this a reality so that researchers world-wide can access this new technology.

The research was published in *Nature Communications*.

**More information:** Cathleen M. Crudden et al. Simple direct formation of self-assembled N-heterocyclic carbene monolayers on gold and their application in biosensing, *Nature Communications* (2016). [DOI: 10.1038/ncomms12654](https://doi.org/10.1038/ncomms12654)

Provided by Queen's University

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